

3 )  
4 ) Civil Action No.  
4 ) 5:16-cv-10444-JEL-MKM  
5 In Re: FLINT WATER CASES ) (consolidated)  
5 )  
6 ) Hon. Judith E. Levy  
6 ) Mag. Mona K. Majzoub  
7 )  
7 )  
8 Elnora Carthan, et al., )  
8 )  
9 Plaintiffs, )  
9 )  
10 vs. ) Civil Action No.  
10 ) 5:16-cv-10444-JEL-MKM  
11 Governor Rick Snyder, )  
11 et al., )  
11 )  
12 Defendants. )  
12 )  
13 )

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ROBERT MICHAELS, PH.D.  
VOLUME II

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1 A P P E A R A N C E S

2 VIA ZOOM

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## 1 I N D E X

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2 P R O C E E D I N G S

3 - - -

4 VIDEOGRAPHER: We are now on the record.

5 My name is Robert Martignetti. I am a  
6 videographer for Golkow Litigation Services.

7 Today's date is November 13th, 2020, and  
8 the time is 8:32 a.m.

9 This continued remote video deposition  
10 is being held In Re: Flint Water Cases.

11 The deponent is Robert Michaels, Ph.D.

12 All parties to this deposition are  
13 appearing remotely. Due to the nature of remote  
14 reporting, please pause briefly to avoid speaking  
15 over someone else.

16 Counsel will be noted on the  
17 stenographic record.

18 The court reporter is Sara Clark.

19 Dr. Michaels, do you understand that  
20 you're still under oath?

21 THE WITNESS: I do.

22 VIDEOGRAPHER: Thank you.

23

24

1

- - -

2 ROBERT MICHAELS, PH.D.

3 being by me previously duly sworn, as hereinafter

4 certified, continues his testimony and says as

5 follows:

6 CONTINUED EXAMINATION

7 BY MR. ROGERS:

8 Q. All right. Good morning, Doctor.

9 A. Good morning.

10 Q. We had an e-mail exchange and some  
11 conversation between Patrick and I before we went  
12 on the record, and it has to do with the issue of  
13 these summaries, what you described as the  
14 physicians' summaries concerning some of the  
15 bellwether plaintiffs.

16 And Mr. Lanciotti stated that you were  
17 provided with physician summaries -- a physician's  
18 summary -- summaries for the Napoli bellwethers.  
19 But what I'm trying to determine, if you were also  
20 provided with any physicians' summaries concerning  
21 medical records for the 10 Levy Konigsberg,  
22 Corey Stern represented plaintiffs, which would  
23 include the four that we're concerned with  
24 sPPI [REDACTED], tPPI [REDACTED], vPPI [REDACTED], and wPPI [REDACTED].

1                   So can you look at your file materials  
2 and determine whether you received any such  
3 summaries concerning those bellwethers?

4                   A. I -- I don't think I have to. I think  
5 you're exciting a memory of mine that I did not  
6 receive those for that group of bellwether  
7 plaintiffs. There was not a physician's summary  
8 section, so I had to rely on the actual medical  
9 records.

10                  Q. Okay. I'm going to ask you to go  
11 ahead -- not right now -- but please confirm that,  
12 because, you know, memory is one thing but  
13 actually checking the file materials is another.  
14 So I'm going to request that you do that just to  
15 confirm.

16                  A. Sure.

17                  MR. STERN: Dave, this is Corey Stern.  
18                  We did not send him any physicians'  
19 summaries.

20                  MR. ROGERS: Okay.

21 BY MR. ROGERS:

22                  Q. So, Doctor, we were provided some  
23 additional information about invoices and an  
24 e-mail when you were retained, so I'm going to

1 share my screen now and show you those.

2 MR. ROGERS: And, Sara, the first three  
3 exhibits I marked as 30 will be marked as 30A, B,  
4 and C, because they're all related to each other.

5 - - -

6 (Michaels Exhibit 30A marked.)

7 - - -

8 BY MR. ROGERS:

9 Q. So, Doctor, you should be able to see my  
10 screen. Can you see this?

11 A. Yes, I can.

12 Q. Okay. So this is the Exhibit 30A, which  
13 I was sent last night or this morning -- I  
14 forget -- I guess last night. This appears to be  
15 an e-mail that you sent to Mr. Lanciotti and  
16 Mr. Napoli and Mr. Shkolnik about, you know, when  
17 you were first retained in the case.

18 So does this indicate the approximate  
19 date on which you were retained, April 27th, 2020?

20 A. Yes.

21 Q. And it describes the work that you're  
22 doing and the price and the evaluation that you're  
23 going to do, right?

24 A. Correct.

1 Q. Did you send this e-mail to them on the  
2 same day that you first spoke to them, or -- do  
3 you remember?

4 A. Within a very short time, I think  
5 probably within a day or two, but I can't recall.

6 Q. All right. And there's a -- there was a  
7 deadline here -- not a deadline but an expectation  
8 that you would provide your report on the matter  
9 on May 29th, right?

10 A. By the 29th of May, yes.

11 Q. Yeah, right.

12 So Mr. Lanciotti sent me another e-mail  
13 last night that forwarded this e-mail that is  
14 marked as Exhibit 30A in which he reported some  
15 estimates of the hours that you spent working on  
16 the case up through the time of your report. And,  
17 you know, I am not able to mark it because I  
18 didn't have it as a PDF version, but in any event,  
19 I'll report what is described. I think this  
20 information came from you, and you can just tell  
21 me whether it's accurate.

22 So what it says here is that the  
23 estimate of hours spent on reports, Report 1,  
24 submitted May 29 -- May 2020, 50 to 100 hours,

1 assuming two to three hours per day over 33 days.

2 Was that your estimate of the amount of  
3 time you spent working on the case through the  
4 first report?

5 A. Yes, it is.

6 Q. That's a pretty wide range, 50 to  
7 100 hours.

8 Did you maintain any time records or  
9 anything like the handwritten notes that you  
10 provided about the time spent that we're going to  
11 get to in a minute that would -- for later work  
12 that you did to narrow that down or make that a  
13 little more accurate?

14 A. I don't know that I could make it more  
15 accurate except to say that if you want it to be a  
16 little more accurate, you probably could make it  
17 66 to 100 hours, because -- what did I say -- I  
18 don't remember even what I estimated there, but I  
19 just rounded it to 50 to 100. It could be 66 to  
20 99 or something like that. It's an estimate.  
21 That's all it is.

22 Q. Okay. So the answer to my question, I  
23 guess, is that you didn't write down the time that  
24 you spent working on the case during that period

1 of time?

2 A. No, I did not. But what I did do was,  
3 you know, I have an iCal thing and I usually write  
4 down on my iCal what I've been working on, but not  
5 necessarily the time that I've spent working on  
6 it. Sometimes, if I'm out doing something like  
7 walking the dog, I put a box in and I know when it  
8 started and when it ended. But if I'm doing  
9 things sporadically all day long, you know, I -- I  
10 don't have that on my calendar. But I usually  
11 know what I've been working on on a particular  
12 day.

13 Q. Okay. So iCal, is that some kind of  
14 personal calendar? Is that what that means?

15 A. Yes. It's my online -- my computer --  
16 the calendar that resides on my computer, yes.

17 Q. Okay. I don't think I asked you this  
18 because, you know, since you did your work on the  
19 case on a flat-fee basis, I assume that it's  
20 correct that you weren't charging any hourly rate  
21 for the work that you did; is that correct?

22 A. Yes, that's correct.

23 Q. What is your rate for providing  
24 deposition testimony?

1           A.    I've declared that \$600 per hour.

2           Q.    And then the e-mail that Mr. Lanciotti  
3    sent includes another line item about the amount  
4    of time that you estimated that you worked to  
5    prepare the report -- the second report concerning  
6    the 10 bellwethers, Mr. Stern's clients that, of  
7    course, would include the four bellwethers that  
8    we're concerned about now since they're part of  
9    that group. And it says here on the e-mail,  
10   Report 2, submitted 6 August 2020, 50 to 100 hours  
11   assuming two to three hours per day times 33 days.  
12   So it's essentially the same.

13           And that's your best estimate of the  
14   amount of time that you spent reviewing the  
15   materials and writing up the report through the  
16   completion date of the report; is that right?

17           A.    Well, it's the best estimate that I  
18   could come up with last night. If you -- if you  
19   assign me and I'm allowed to spend hours of my  
20   time going through my calendar and looking at  
21   which days I might not have worked on it at all, I  
22   might be able to narrow things down a little. But  
23   I -- that's what I was able to come up with last  
24   night, yes.

1 Q. Yeah. I'm not trying to argue with you  
2 about it. I'm just trying to get the information.  
3 So this is what I was provided.

4 As of today, this is your best estimate,  
5 having looked at your iCal or calendar entries  
6 last night, as to the amount of time that you  
7 spent doing the work on the case, right?

8 A. Well, close to being right. I did not  
9 look at my entries on my iCal. I looked at the  
10 date that I started work on each one, and I looked  
11 at the date that I submitted it. Both of them  
12 were 33 days. So that's how I figured it out.

13 Q. All right. So what you're saying is  
14 that -- I understand now -- that if you did look  
15 at your iCal, it's possible that you could provide  
16 a more accurate estimate between the 50 and  
17 100 hours, right?

18 A. Yes. I could remove some days when I,  
19 you know, did something else.

20 - - -

21 (Michaels Exhibit 30B marked.)

22 - - -

23 BY MR. ROGERS:

24 Q. All right. Let's go to Exhibit 30B.

1 Can you see that now?

2 A. Yes.

3 Q. I see.

4 So what this indicates is that this  
5 relates to the work that you did for the first  
6 group of plaintiffs, the four bellwethers from the  
7 Napoli law firm, because it says here "Retainer,  
8 April 30th, per agreement, 7,500." And then the  
9 lump sum, per agreement, was 15,000 total, right?

10 A. Correct.

11 Q. I see.

12 So the total amount that you billed for  
13 the work that you did through retention -- the  
14 date that you were retained through the completion  
15 of that first report was \$15,000, right?

16 A. Yes.

17 - - -

18 (Michaels Exhibit 30C marked.)

19 - - -

20 BY MR. ROGERS:

21 Q. All right. And then the third item that  
22 I wanted to mark is now Exhibit 30C. And as I  
23 think we discussed yesterday at some point during  
24 your deposition, there was an indication that you

1 had some handwritten notes concerning time spent  
2 in between the completion of your report -- your  
3 last report and up until the present.

4 Is that what these are?

5 A. Yes, that's correct.

6 Q. All right. Just so I make sure I  
7 understand what these columns mean, I see on the  
8 left side here is the date, and then the times,  
9 right?

10 A. The date is on the top and the times on  
11 that date are below start and finish, and then I  
12 add them up, the numbers of minutes, in an hourly  
13 rate.

14 Q. Yep.

15 What does the "300" mean in the  
16 Column 2?

17 A. That's the hourly rate.

18 Q. Oh. But you didn't -- is that what you  
19 are -- the agreement was that for this amount of  
20 time after the reports, you would charge an hourly  
21 rate?

22 A. I don't recall what we -- maybe. I  
23 don't know. I mean, if my clients don't want to  
24 pay that, well, we'll -- I don't know what to say

1 about that. I -- I don't recall what we said  
2 about my hourly rate, although I think we probably  
3 specified it.

4 Q. Well, they're on the deposition now.

5 You might as well try to nail it down with them.  
6 Get an agreement right now that that's what  
7 they're going to pay.

8 A. I'm not concerned about it.

9 Q. All right. So the -- I see. And then  
10 you see down -- for the entry for yesterday,  
11 Thursday, November 12th, you did record the  
12 \$600 hourly rate for the deposition.

13 Okay. Now, what do these entries  
14 mean -- let's go across Column 3.

15 What does this mean, "bellwether"?

16 A. These are the plaintiffs that -- there's  
17 14 bellwether plaintiffs. That was the  
18 terminology we were using. Ten that were the  
19 subject of the second report, including the four  
20 that were selected for our subject today. But  
21 this is before those four were selected. So there  
22 were 14. And this is -- I was asked to look into  
23 how to select them, and that's what I did.

24 Q. Well, it seems like you have an entry

1 across Columns 4 and 5 that says plaintiffs --  
2 "P," I guess.

3 Does "P" stand for plaintiff?

4 A. Yes, right.

5 Q. I see. Oh, I get it. I think what this  
6 means is bellwether plaintiff selection criteria,  
7 and your entries for -- in Column 3 for these  
8 dates, the work that you were doing on all of  
9 these dates for all of these time entries involved  
10 bellwether plaintiff selection criteria.

11 Do I have that right?

12                   A.     All the way down to the 10th of  
13 September, until you see an entry for calling  
14 Patrick Lanciotti.

15 0. Okay. Thank you for that.

16 A. And then I see there was some more of  
17 that, yes. Okay. Yeah.

18 Q. All right. So then you have entries  
19 here for a call with Mr. Lanciotti, and then you  
20 continue with more entries for bellwether  
21 plaintiff selection criteria, right?

22 A. Correct.

23 Q. Okay. And then I see here you have  
24 deposition prep, call with Mr. Lanciotti, another

1 call with Mr. Lanciotti, and deposition prep, it  
2 looks like, on Friday, October 30th, right?

3 A. Yes.

4 Q. Then we go to November 10th, the entry  
5 says here "Depo Self-Prep: Review Report." I  
6 think you described that yesterday. Okay.

7 And then there's another entry for the  
8 11th, this week, Wednesday the 11th, Zoom meeting  
9 with Mr. Lanciotti and Mr. Stern and examine  
10 documents.

11 What documents were you examining during  
12 that Zoom call -- conference?

13 A. I don't recall. I'm sure -- I don't  
14 recall.

15 Q. All right. So this looks like, then,  
16 from the date that you completed your report up  
17 till Monday, September 7th, is it correct that you  
18 didn't do any work on the case during that period  
19 of time?

20 A. I don't know. I certainly didn't charge  
21 for it. That's the only thing I can say.

22 Q. All right. Let's move on to some issues  
23 that came up yesterday having to do with the  
24 vPPI ████████ -- Mrs. vPPI ████████ testimony about

1 when the family stopped drinking water and other  
2 things.

3 Do you recall that basic subject matter  
4 of testimony yesterday?

5 A. Yes, I do.

6 MR. ROGERS: So let's mark this, please.

7 The next one will be -- this will be Exhibit 31.  
8 It's selected pages from Mrs. V██████████  
9 deposition.

10 - - -

11 (Michaels Exhibit 31 marked.)

12 - - -

13 BY MR. ROGERS:

14 Q. And I want to show you this series of  
15 questions and answers, okay, on Page 60, and  
16 then -- 60 and following.

17 The question is, first one: "Now, these  
18 news reports in late 2014 are the reports that you  
19 referenced a few moments ago that the water was  
20 bad, right?"

21 And she says -- her answer is: "Yes."

22 And then the question is: "And so when  
23 you heard those news reports in late 2014, you and  
24 your family stopped drinking the water?"

1 And her answer is: "Correct."

6 And her answer was: "Yes."

7                   Then a couple more questions and answers  
8       here.

9                   "And you've got four children in the  
10   home. They also stopped drinking the water at  
11   that time?"

17 So is this the information that you  
18 believe to be the best source of the facts as to  
19 when the VPPD ██████████ stopped using tap water for  
20 drinking and cooking?

21 A. I believe that that's what I cited. I'm  
22 not sure -- I don't remember exactly what I cited.  
23 But as I say, I've gone through these depositions,  
24 and I sometimes have found conflicting

1 information, or vague information, and I -- I'm  
2 not able to compare this with other parts of the  
3 deposition, but this is probably what I cited.

4 Q. Is there anything vague about this in  
5 your view?

6 A. Well, yeah. I don't know exactly when  
7 it occurred, but sure.

8 Q. I'm sorry. What do you mean you don't  
9 know when it occurred? She said here clearly the  
10 family stopped drinking the water and stopped  
11 using the water for cooking by December of 2014.  
12 What's unclear about that?

13 A. Well, I believe what it says is not by  
14 December of 2014, but in December 2014 or by  
15 December, and there's 31 days in there. That's  
16 unclear when the thing occurred, whether it  
17 cleared abruptly, and whether it was absolute, you  
18 know. Whether -- whether the compliance with that  
19 policy in the family was 100 percent effective.

20 So I -- so I don't -- I don't consider  
21 that definitive -- it was definitive enough for my  
22 report to state my assumptions, but in terms of  
23 what we raised earlier in terms of how many days  
24 of exposure, what could you put into a model, you

1 would -- to do a quantitative risk assessment  
2 here, you would have to look at other kinds of  
3 information that is not included here, such as  
4 whether they brushed their teeth and so on, washed  
5 dishes. I don't know -- I'm looking at this kind  
6 of halfway, but it's vague, as I said. But it is  
7 generally -- gives the idea that they stopped.

8 Q. Are you aware of any evidence that the  
9 vPPI ██████ used tap water for drinking or for  
10 cooking at any point in time from January 1st,  
11 2015 forward?

12 A. My memory does not contain such  
13 evidence, no.

14 Q. Okay. There were some questions I asked  
15 you yesterday in which you said -- paraphrasing  
16 here -- that you had reviewed some FAST Start  
17 service line information and data concerning the  
18 composition of the service lines of the bellwether  
19 plaintiffs, these four bellwether plaintiffs.

20 - - -

21 (Michaels Exhibit 32 marked.)

22 - - -

23 BY MR. ROGERS:

24 Q. And what I'm showing to you here is

1 Exhibit 32, which is a spreadsheet that contains  
2 the addresses for the four bellwethers from the  
3 FAST Start data.

4 Do you recognize this spreadsheet as the  
5 type of information that you were referring to  
6 yesterday when you reviewed spreadsheets  
7 concerning the service line composition for the  
8 bellwethers' residences?

9 A. I don't have a very specific memory of  
10 the spreadsheet, except to say that it was huge.  
11 And what I did was a search on the addresses, and  
12 I didn't find them. I don't know if it was the  
13 spreadsheet in which this was contained or  
14 something else, but it is the kind of information  
15 I was looking for, yes.

16 Q. Okay. So what we did was we did select  
17 these addresses and, you know, it's not the full  
18 spreadsheet that I think is clear, but we selected  
19 and just excerpted out the addresses that we're  
20 concerned about.

21 And you can see here that the addresses  
22 are in Column A. The B column is "SLE/SLR." And  
23 what that means from the spreadsheet is service  
24 line excavation, slash, service line repair date.

1 And then it says -- it lists information for the  
2 service lines, both the public and private, as to  
3 what the composition was. And then in Column E  
4 here, whether it was replaced or not. And then  
5 the last column is the phase. There were -- as  
6 you know in the FAST Start program, there were  
7 different phases to the whole thing.

8 You're familiar with that?

9 A. I don't recall it, no, but maybe I was  
10 looking at a different phase. I really don't --  
11 you know, that's -- that is interesting. I may  
12 have been looking at a database that did not  
13 include those addresses. That's possible.

14 Q. So I'll just report to you that the  
15 Montana Avenue house is the residence for the T~~PPI~~  
16 family; the Cherokee Avenue, the second one, is  
17 for the T~~PPI~~ family; the Burlington address is for  
18 W~~PPI~~ family; the S~~PPI~~ address is the  
19 Lincoln Avenue address; and the last one here,  
20 V~~PPI~~ is the Woodrow Avenue address.

21 So according to these records, at least,  
22 both the public service line and the private  
23 service line when they were excavated and  
24 evaluated, were all copper, is that right,

1 according to this anyway?

2 A. Yes, on those dates. That's correct.

3 Q. And it says for all of them that no  
4 portion of the service line was replaced, right?

5 A. Well, it says that no portion of the  
6 service line was replaced on the date that is  
7 listed in Column B. I don't know that they were  
8 not replaced earlier. I do recall that in at  
9 least one, and I -- perhaps more than one  
10 deposition of the bellwether parent, there was  
11 some discussion of replacement that they observed  
12 out of -- out of their house. And I don't know  
13 that -- I don't recall what the dates were.

14 Q. Wasn't the testimony that the -- there  
15 was an excavation in the front yard that would be  
16 consistent with an inspection of the pipe but not  
17 a replacement?

18 A. I don't know.

19 MR. LANCIOTTI: Object to form.

20 Q. Do you know of any way to determine what  
21 the composition of a service line is except for  
22 excavating it and actually, you know, examining  
23 it?

24 MR. LANCIOTTI: Object to form.

1           A. Well, I don't -- I don't have that kind  
2 of information. I imagine that somebody -- there  
3 must have been records of when it was put in place  
4 and what the material was at that time. So there  
5 could be documentary records. I'm just  
6 speculating about that. But if you're asking if I  
7 can imagine other ways of finding out, yes, I can  
8 imagine --

9           Q. I don't want you to imagine. I'm asking  
10 you if you know.

11           Are you aware, sir, do you know, if  
12 there are any other ways to determine what the  
13 composition of the service line is besides or  
14 separate from excavating it and inspecting it?

15           A. Well, let me tell you what I do know.  
16 When people hire contractors, they usually get a  
17 description of the work that they're about to pay  
18 for. And that work would include the materials.  
19 Do such documents still exist or can they easily  
20 be accessed? That, I don't know. But if you're  
21 asking me if I know of other ways, yes, that is  
22 what I answered before. I know of one other way.

23           Q. And that other way would be to review  
24 records to determine if they describe the

1 composition of the lead service lines at some  
2 point in time when they were originally installed?

3 A. Yes. Those would include two kinds of  
4 documents. One is the design document, and the  
5 other is the as-built document when there are  
6 variations from the way the thing was designed.

7 So those two classes of documents would be  
8 potential ways of finding out how the service --  
9 what these service lines contained.

10 It's a hypothetical question. I don't  
11 know that these documents exist. I can hardly  
12 remember these lines being in my -- I don't -- I  
13 think if I saw these, I would have reported them.  
14 I certainly didn't report the contrary.

15 Q. All right. So just to close this out,  
16 then, it's correct, right, that you have not seen  
17 and are not aware of any actual as-built or design  
18 information as to the content of the composition  
19 of the service lines for these addresses, right?

20 A. Right.

21 Q. So assuming that these records are  
22 correct and that during the period of time that  
23 there was the water switchover, the public portion  
24 of the service lines for these residences where

1 the bellwether plaintiffs lived and the private  
2 portion of the service line were copper and not  
3 lead, what effect would that have, if any, on your  
4 evaluation of the extent to which there was an  
5 increased lead exposure for these families?

6 A. Yeah, I don't think what you -- the  
7 premise of your question was correct. As I  
8 pointed out before, that no portion of the service  
9 line was replaced on the date when it was  
10 inspected in 2018 or 2019. I don't know what  
11 preceded that. I don't know if somebody replaced  
12 service lines before that.

13 This was a program in which service  
14 lines were looked at. The prior history is opaque  
15 to me. So just putting that on the record, I  
16 don't know that the service lines were copper  
17 during the period of Flint River water use.

18 Now, assuming that that's the case, I  
19 don't believe that I reported the contrary in my  
20 report.

21 Q. Can you answer this question, Doctor:  
22 Assuming that the service lines for the residences  
23 in which the bellwethers lived were copper and not  
24 lead, what impact does -- during the time of the

1 water switchover, from April 2014 to October 2015,  
2 what effect or impact does that have on your  
3 evaluation and your opinion as to whether there  
4 was increased lead exposure for these families and  
5 these bellwether plaintiffs because of the water?

6 MR. LANCIOTTI: Object to form.

7 A. Yeah, the report that I wrote addressed  
8 the question of the children's exposure to lead,  
9 not specifically whether it was increased or  
10 decreased.

11 That said, I would say that I also made  
12 clear in my report that there are other sources of  
13 lead that could explain why the kids have body  
14 burdens of lead that were measured. And the  
15 specific one that I emphasized was that the  
16 internal plumbing in the house and the fixtures in  
17 the house could have lead or solder that contains  
18 lead. I think that was made very clear in my  
19 report.

20 Q. So your opinion is that to the extent  
21 water during the water switchover period was the  
22 source of any lead exposure for the families is  
23 that there would -- it would have had to have come  
24 from lead in the plumbing fixtures in the house

1 if, in fact, the service lines were made of  
2 copper; is that right?

3 MR. LANCIOTTI: Object to form.

4 A. As I pointed out before in an earlier  
5 part of our discussion, the upstream portion also  
6 was something that conceptually could have lead.  
7 I don't know. And the upstream portion being the  
8 water mains and the water treatment plant.

9 So, you know, I think the most likely  
10 place is probably inside the plumbing of the  
11 house. If there's no lead in the plumbing of the  
12 house, then you could exclude that as well. And I  
13 think all of that is clear in my report.

14 But the other thing that's clear in my  
15 report is that you do have to account for the fact  
16 that these kids have lead in their bodies. I  
17 think that's pretty uncontroverted --  
18 incontrovertible.

19 Q. Let's go to the next exhibit, which it  
20 looks like I messed up on the numbering here.  
21 That's okay, though. We can go back to it.

22 MR. ROGERS: So what I'm going to show  
23 you now, Sara, we're going to mark this as  
24 Exhibit 33 just to keep my numbering system

1 consistent here and we'll go back to 32 in a  
2 little bit.

3 - - -

4 (Michaels Exhibit 33 marked.)

5 - - -

6 BY MR. ROGERS:

7 Q. Can you see what's up on the screen now,  
8 Doctor?

9 A. I do.

10 Q. So this is a paper from the  
11 "Environmental Claims Journal" that you were the  
12 author of entitled "Legacy Contaminants of  
13 Emerging Concern: Lead, Flint, Michigan, and  
14 Human Health," right?

15 A. Yes. They left off the colon somehow.  
16 I don't know if they corrected that.

17 Q. Where would the colon go?

18 A. After "concern."

19 Q. I see.

20 Okay. Now, I want to ask you about the  
21 timing of this. It appears -- there's some  
22 numbers up here -- can you see this right here  
23 where my cursor is?

24 A. Yes.

1 Q. And I don't know what these numbers  
2 mean. Do you know when -- when did you write this  
3 paper? Put it that way. When did you write it?

4 A. You know, it says 2019 in there. I  
5 probably wrote it in -- I don't know, maybe in  
6 2019 or 2018. But I -- let me check on that, you  
7 know. It's in the "References" section, I'm sure,  
8 so let me --

9 Q. Yeah, it is. I'd like to know when you  
10 wrote it as opposed to the publication date.  
11 Because if you look at the bottom of the first  
12 page here, it says "copyright 2019" for the  
13 publication. But I'd like to know if you can tell  
14 me when you wrote it as opposed to when it was  
15 published.

16 A. I can guarantee you that it was before  
17 the publication date, but other than that, I don't  
18 know. If I look at the -- part of the year, as  
19 I've said, it most probably was in 2019, but I --  
20 I don't know.

21 And let's put it this way. As I've  
22 said, I've had a lot of projects on lead. And so  
23 some of the components of the paper include text  
24 that I'm sure I drew from previous years' work. I

1 don't know specifically because I don't -- I  
2 don't -- I don't keep track of all of that. But,  
3 you know, this is -- this is the manuscript I came  
4 up with in 2019, I think.

5 Q. Okay. You raised the issue that I --  
6 you just said about, you know, building off of, I  
7 think, you know, prior work that you had done on  
8 lead and including it in this paper.

9 It's true, isn't it, that you basically  
10 excerpted or took from this paper the text and  
11 some of the diagrams and figures and you put it --  
12 placed it directly into your reports in this case,  
13 right?

14 A. Yes, I did do some of that, yes.

15 Q. Okay. And in particular, I'm going to  
16 show you -- just bear with me -- the dose-response  
17 chart that is in your report that we talked about  
18 yesterday. I'm sorry. Bear with me a second here  
19 while I scroll to that.

20 Okay. Here it is. So on Page, it looks  
21 like, 29 of this article, this information here,  
22 the dose-response chart, that's the same chart  
23 that's in your report -- reports in this case,  
24 right?

1 A. Correct.

2 Q. And this is not something that you  
3 created. This actually came from the American  
4 Thoracic Society from a report that was published  
5 back in 2000, right?

6 A. No, that is not right. I created this  
7 myself.

8 Q. Oh. So is this -- is this dose-response  
9 chart based on this 1985 ATS statement from the  
10 American Thoracic Society?

11 A. No. No. I think you have to look at  
12 the text and see where it first references  
13 Figure 1 up ahead -- up higher, usually on the  
14 page before. You know, the editor takes some  
15 liberties about where he or she put the figures  
16 and tables.

17 Q. Okay. Yeah, I didn't see that, so let's  
18 scroll through and see if we can find it. We're  
19 on Page 28.

20 I don't see any references to Figure 1.  
21 It says here, "The figure on Page 6" -- do you see  
22 where my cursor is?

23 A. Yes.

24 Q. -- "The figure on Page 667 of American

1 Thoracic Society (1985) illustrates," et cetera.

2 Doesn't that mean that this figure that  
3 you have in here came from there?

4 A. No. I did not copy that figure. That  
5 was my figure. But let me -- if I -- maybe they  
6 put it below. I don't know.

7 Q. All right. But it doesn't -- when you  
8 say "they," I mean, it's your manuscript. You  
9 don't have any attribution here for this Figure 1  
10 that I can find or see other than this reference  
11 to the American Thoracic Society work.

12 A. Well, I will look through my copy of the  
13 manuscript and see if I find it.

14 Q. And, actually, can I point you to this  
15 right here? I'll highlight it for you.

16 This section, "The EPA has portrayed  
17 this pollution burden, Figure 1."

18 But that's not this Figure 1, though, is  
19 it?

20 A. No. That's a quote from probably the  
21 American Thoracic Society.

22 Q. All right. Well, be that as it may, as  
23 we've established, a not-insignificant amount of  
24 this paper, the exact language that you have in

1 this paper, made its way into your reports in this  
2 case; is that right?

3 MR. LANCIOTTI: Object to form.

4 A. Yeah. I would say that "made its way"  
5 is somehow like the rebel force intruding on  
6 something. This is my work, and I used it for my  
7 report.

8 Q. That's fair. I didn't mean to imply any  
9 mysterious force. I was just using a sort of  
10 lay-handed -- or I don't know what you call it.

11 So the point is that a lot of the actual  
12 language from this paper based upon your work, you  
13 thought relevant, and, therefore, included it in  
14 your reports on this case, right?

15 A. Yes.

16 MR. LANCIOTTI: Object to form.

17 A. The toxicological issues, I did, yes.

18 Q. All right. Let's stop the share screen  
19 at this point.

20 Actually, we'll have to go back to the  
21 share screen because I want to ask you some  
22 questions about your report.

23 Do you still have a copy -- paper copy  
24 of your report handy?

1 A. Yes, I do.

2 Q. Thanks.

3 Okay. I'm going to show you some  
4 information on Page 6 right down at the bottom,  
5 and it carries over to Page 7.

6 "Use of Flint River water began on  
7 25 April 2014 and ended in mid-October 2015 when  
8 the system reconnected to the DWSD supply."

9 On the top of Page 7, "Thus, the period  
10 of potential exposure exceeded one year.

11 Exposure, therefore, was potentially chronic in  
12 toxicology terms as distinguished from acute  
13 (roughly up to a day, 24 hours) and subchronic (in  
14 between acute and chronic, variously defined,  
15 approximately three months)."

16 I think I understand what you're  
17 defining these terms to mean, but I just want to  
18 make sure. So can you explain what you are  
19 referring to here in terms of the exposure period,  
20 what would be chronic, what would be acute, and  
21 what would be subchronic?

22 A. Well, a chronic exposure is a long-term  
23 exposure. That's the general meaning of it. In  
24 actual terms, a lot of studies on which chronic

1 exposure is evaluated are one-year studies or  
2 longer. And so one year is the definition --  
3 pretty common definition of chronic exposure.

4 And, again, there are no bright lines.  
5 The subchronic is not defined uniformly, and  
6 that's why I say that between acute and chronic, I  
7 believe that the CDC uses three months. I'm not  
8 sure. I think the EPA may use one month. I'm not  
9 sure about that either. They may use two weeks  
10 and perhaps use both in different contexts.

11 But acute usually is within one day.  
12 Acute is something that is often very sudden  
13 exposure, such as you might encounter in a poison  
14 control center where people, you know, might come  
15 sick because they swallowed a bottle of pills. So  
16 that occurred at a very quick period of time. But  
17 roughly speaking, acute exposure can be up to  
18 about a day, and that is pretty uniform  
19 definition.

20 Q. So just to make sure I've got this now,  
21 the term -- you have it in quotes here --  
22 "chronic" in toxicology terms, what you are saying  
23 is that your definition of that term means a  
24 period of at least one year; is that fair to say?

1 A. Roughly one year, yes, that time frame.

2 Q. Roughly one year.

3 And your definition of, quote, "acute"  
4 is roughly up to a day or 24 hours, right?

5 A. Correct.

6 Q. I see.

7 And then subchronic would be somewhere  
8 in between one day and one year, but you're also  
9 sort of limiting it to approximately three months,  
10 right?

11 A. I'm suggesting that that's pretty common  
12 in the way people think about it, yes.

13 Q. All right. Did you attempt in your  
14 work -- or strike that. Not attempt.

15 Did you in your work on this case  
16 determine for each of the four bellwethers that  
17 we're concerned about here, S[PPI] , T[PPI] ,  
18 V[PPI] , and W[PPI] , which of these definitions  
19 for the exposure period they fell into or they  
20 should be characterized as, chronic or subchronic?

21 A. To the extent that it is reported, I  
22 have done that. I believe we looked at some of  
23 the sections regarding the number of days of  
24 residential exposure potentially, the number of

1 days of exposure at school as well. And, you  
2 know, if they overlapped, of course, you would use  
3 the same time periods. You wouldn't add them up.

4 And so there was some addressing of that  
5 issue. I did not probably specifically conclude  
6 that the exposure was chronic or subchronic or  
7 acute. And one reason for that is something else  
8 that I've mentioned to you earlier in our  
9 discussions, which is that exposure to lead, once  
10 it occurs and results in storage of the lead,  
11 continues beyond the day you turn off the spigot.  
12 It continues potentially for years after that,  
13 and, therefore, exposure to lead is one of those  
14 sorts of things that is difficult to fit into  
15 this -- into this paradigm.

16 Now, exposure externally is one thing,  
17 and you can fit it into that. Obviously, you turn  
18 off the spigot and the exposure may stop soon  
19 after that. But internal exposure continues.  
20 That's made quite clear, I think, in my report.

21 So, again, it's one of those kinds of  
22 questions where in this case, it's a distinction  
23 made without much of a difference.

24 Q. With respect to your description of

1 turning off the spigot, if -- with respect to the  
2 bellwether plaintiffs' exposure to water from  
3 drinking the water, the exposure period would end  
4 as of the point in time at which they stopped  
5 drinking the water in their residences.

6 I'm referring to residences only at this  
7 point in time, not schools, right?

8 A. The drinking exposure --

9 MR. LANCIOTTI: Object to form.

10 A. -- would stop, yes. It would stop  
11 except to the degree that it occurs incidentally  
12 in brushing one's teeth or washing dishes and that  
13 sort of thing, yes.

14 Q. Okay. Thank you.

15 And to the extent that the families  
16 stopped using the tap water for cooking, the  
17 bellwether plaintiffs, the children's exposure to  
18 lead by ingestion of water that would be used in  
19 cooking would also have ended as of the point in  
20 time that they stopped using the water for  
21 cooking, right?

22 A. Well, it would stop from cooking, yes.

23 It would continue to the extent that brushing  
24 one's teeth produces exposure or bathing produces

1 exposure. And as I've said before, internal  
2 exposure continues from past exposure.

3 Q. And with respect to the water in their  
4 homes, if there is no lead in the main pipes, or,  
5 that is to say, the main pipes are not made of  
6 lead, and the service lines going into their homes  
7 are not made of lead, in your opinion, the only  
8 source of the lead that could be going into the  
9 water as -- before it comes out of the tap in  
10 those homes is due to solder, potentially lead  
11 solder, in the fittings in the plumbing; is that  
12 right?

13 MR. STERN: Object to form; outside the  
14 scope of his expertise.

15 A. As I've also mentioned, we talked about  
16 the upstream places where it could come from, such  
17 as the water treatment plant. We've also talked  
18 about internal plumbing of the house, having lead  
19 pipes or components and fixtures that contain  
20 lead, and we've talked about the one that you  
21 included, which was solder that contains lead.

22 Q. Right. And I think we covered this  
23 yesterday, and, you know, I don't have a clear  
24 memory of it. Just to close it out -- I'm not

1 trying to be repetitive -- but you personally, as  
2 of today, don't know what the plumbing -- the  
3 composition of the plumbing within these  
4 bellwether residences during the switchover is or  
5 was, right?

6 A. Right.

7 Q. All right. I'd like to return to an  
8 exhibit that we marked yesterday. It's the -- one  
9 of the Edwards' papers. It's Exhibit 24, the  
10 biosolids study. I want to go back to this for a  
11 minute. And, again, I don't mean to repeat. I  
12 didn't have a chance to read your transcript --  
13 the rough transcript that Sara prepared very  
14 efficiently, as usual, and got out last night for  
15 us, but I think I'm correct that you have not read  
16 this paper before, right?

17 A. I believe that this is not one that I  
18 cited, yes.

19 Q. And, in fact, I think you said yesterday  
20 that you didn't even know who Dr. Marc Edwards  
21 was, right?

22 A. If I said that, that's true. I don't  
23 recall a Marc Edwards.

24 Q. Okay. So I want to ask you if some of

1 the findings that are reported in this article, if  
2 they are true and accurate and factual, have any  
3 impact on any of the opinions that you hold in the  
4 case.

5 So what he says here -- what the authors  
6 say here is "Although total biosolids lead  
7 increased just 14 percent during the 18 months of  
8 the Flint water crisis versus the comparable time  
9 pre-Flint water crisis, 76 percent of that  
10 increase occurred in July through September 2014,  
11 and the corresponding percentage of Flint children  
12 under six years of age with elevated blood lead  
13 greater than or equal to 5 micrograms per  
14 deciliter doubled from 3.45 percent to  
15 6.61 percent in those same three months versus  
16 2013."

17 So if that is correct and accurate, does  
18 that impact your opinions concerning lead exposure  
19 for these bellwether children in any way?

20 MR. LANCIOTTI: Object to form and  
21 foundation. He's already testified that he hasn't  
22 had a chance to review this report in its  
23 entirety.

24 A. Exactly. And I must say that you're

1 showing me a part of the abstract of a report that  
2 has a much larger context, and I need to look at  
3 that report and have time to evaluate it to  
4 understand what it's trying to say. Well, I think  
5 that's enough.

6 Q. Well, but I want you to assume that what  
7 is said here is true. I understand you haven't  
8 read it and you may at some point in time do that,  
9 but assuming that this report is true, that it's  
10 accurate, that 70 percent of the increase occurred  
11 during the summer months of 2014, does that -- if  
12 that fact is true, would that influence any of  
13 your opinions that you hold in the case as to the  
14 lead exposure for the four bellwether plaintiffs?

15 A. As I said --

16 MR. LANCIOTTI: Objection; form and  
17 foundation.

18 A. As I said, I have not read this paper  
19 and, therefore, I don't know what it says, and,  
20 therefore, if it's true or not true, I don't know  
21 what it would imply for my opinions.

22 This does refer specifically to  
23 biosolids, and so right there, I have to say that  
24 that excludes some sources of lead. And so I

1 don't really know what this paper is trying to  
2 say. Biosolids is a very specific subcategory of  
3 solids, and solids are a specific subcategory of  
4 lead content, which includes some soluble forms of  
5 lead although they're not usually soluble.

6 So all I can say is that you are showing  
7 me something from which, had I opined on it, you  
8 might have criticized that I had looked at the  
9 paper. I've only looked at that sentence. And so  
10 I can only tell you that I don't know what this  
11 would imply, if true, for my opinion.

12 Q. Have you in any of your past work,  
13 either for litigation cases or in your regular  
14 business consulting work, done any analyses of  
15 lead content in biosolids?

16 A. I don't recall doing that, no.

17 Q. What do -- you described something about  
18 what biosolids are. What's your understanding of  
19 what biosolids are?

20 A. Again, you've not let me see this entire  
21 paper. The authors have the definition, I'm sure,  
22 of what biosolids are. I don't know what that  
23 definition is. I only know that, you know, an  
24 organic molecule must be implied by that, but I

1 don't really know.

2 Q. All right. I want to go to the Pieper  
3 study, which you do cite in your report at various  
4 locations.

5 MR. ROGERS: And, Sara, this is now  
6 Exhibit 32. We went backwards in the exhibit  
7 marking.

8 Q. Dr. Michaels, you recognize this paper  
9 as one of the scientific papers that you cite in  
10 your report and rely on to some extent?

11 MR. LANCIOTTI: I'm sorry, Dave. I  
12 think for clarity of the record, we've already  
13 marked an Exhibit 32.

14 MR. ROGERS: Oh. Well, let's check that  
15 out. If we did, that's a mistake.

16 Thank you for that, Patrick. So what  
17 we're going to do is -- that's right. So 32 is  
18 the lead service line spreadsheet. So 33, the  
19 Michaels paper that we just looked at, is correct.

20 And let's make this one now 34.

21 Thank you for that.

22 MR. LANCIOTTI: Yep.

23 - - -

24 (Michaels Exhibit 34 marked.)

1

- - -

2 MR. ROGERS: Okay. All clear, Sara?

3 You got that? This is 34.

4 You know what? And, Sara, if I send you  
5 this later today and it's got a 32 number on it,  
6 that's my bad. I just didn't change it. So just,  
7 you know, make sure -- please check that out and  
8 make sure I didn't make a mistake when I send you  
9 these. Okay? Thank you.

10 BY MR. ROGERS:

11 Q. All right. I don't know if we got an  
12 answer, Doctor, while we were having this  
13 conversation.

14 This is the paper that you cite in your  
15 report for various things, right?

16 A. Correct. I don't know about various  
17 things but, yes, I cite it in the report.

18 Q. Okay. That's what I'm really going to  
19 ask you to explain for -- to me or for us.

20 In your view, what is the important  
21 information in this paper that informs and that  
22 you rely on for any of the opinions or findings  
23 that you have in your report?

24 A. Yes. I recall that we brought up this

1 subject -- or you brought up this subject  
2 yesterday, and I see that on Page 109, we do see  
3 some discussion of the Pieper, or however you  
4 pronounce his name, paper.

5 Q. I'm sorry. I had to take my earphones  
6 out to get to your report, which was on my floor.

7 Did you say Page 109?

8 A. Yes.

9 Q. Okay. So let me just take a look at  
10 that. Bear with me.

11 Okay. So on Page 109, you have a quote  
12 from this Pieper paper, right?

13 A. Yes.

14 Q. All right. So let's -- I don't know.  
15 Let me see if I can find where in the report it  
16 is, that quote, so that we don't have to go back  
17 to the report. Oh, there you say it. It says  
18 Pieper 2018, Page 8126. So let's see if we can  
19 find it. Yeah, I think it's right over here.  
20 Yeah, this is it.

21 So would you agree with me that on your  
22 report on Page 109, you have quoted this section  
23 of the Pieper paper?

24 A. Yes.

1 Q. And what I wanted to ask you about here  
2 is, so what is important -- you quoted, but in  
3 reading the report, I'm not really understanding  
4 what the significance of it is.

5 Would you explain, what is the  
6 significance of this information to the opinions  
7 that you hold in the case?

8 A. I believe that it was the idea that it  
9 was a system -- the conclusion of the paper was  
10 that this was a system-wide problem and that the  
11 ZIP codes, that include the ZIP codes where the  
12 four plaintiffs live, are heavily impacted and  
13 that this is a systemic problem for those ZIP  
14 codes.

15 Q. Do you know whether the authors in their  
16 work of this paper attempted to determine what the  
17 composition of the service lines in the houses  
18 where the samples were taken? Do you know if they  
19 did that?

20 A. I don't recall. It may be in the paper.

21 Q. I want to ask you about this entry right  
22 here. Can you see where my cursor is?

23 A. Yes.

24 Q. It says "The median water lead level was

1     3.5 micrograms per liter and 85 percent of the  
2     samples contained lead above the minimum reporting  
3     level of greater than or equal to 1 microgram per  
4     liter." Right?

5                     A.     Correct.

6                     Q.     So what does that tell you, if anything,  
7     important to any of the opinions that you hold,  
8     that the median water lead level for the samples  
9     that these authors are reporting on was  
10    3.5 micrograms per liter?

11                  A.     I don't know. A median is just a point,  
12    so it was just one study. I don't know what it  
13    would imply. I'd have to look at my text and see  
14    if there's any use of that information.

15                  Q.     So -- but the way that you were -- as  
16    you just described, using this information from  
17    this paper was to explain or support your position  
18    that there was a system-wide problem within the  
19    water supply?

20                  A.     I'm sorry. Could you repeat that?

21                  Q.     Yeah.

22                  The way that you were using this  
23    information was to support your opinion or  
24    statement that there was a system-wide problem

1 with lead contamination in the water?

2 A. No, I wouldn't characterize it that way.  
3 I would say that if I have that opinion, it's  
4 because of the information I use. I didn't pull  
5 it out because the information supports my  
6 opinion.

7 Q. Well, I -- again, I think we're engaging  
8 in semantics again here.

9 So this information is supportive of  
10 your opinion that you have and hold that there was  
11 a system-wide problem with lead contamination in  
12 the water; is that what you're saying?

13 A. I'm saying that the quotation that I  
14 used supports that, yes. Not particularly the  
15 mean number, but, yes, the quotation does.

16 Q. Why do you say "not particularly the  
17 mean number"?

18 A. Because the entire quotation was quoted,  
19 and the conclusion drawn by the authors is based  
20 on their database and on their -- the information  
21 they condensed from their studies. They did tell  
22 us the median value, but that doesn't constitute  
23 the full basis for the authors' conclusion, or  
24 mine.

1                   Q.    Do you use or cite this paper or any  
2   language from the paper for any other purposes in  
3   your report, do you know?

4                   A.    I don't recall.  If I used that paper in  
5   more than one place, I probably would have cited  
6   it in more than one place.  And you can check to  
7   see if I did.

8                   I did use it -- I'm looking at my paper  
9   right now, and I can see that I used that quote in  
10   respect to conclusion -- in respect to findings  
11   made with respect to some of the plaintiffs.  So  
12   I've brought that out in more than one place.

13                  Q.    Let's go to your report again.  I'm  
14   going to direct your attention to Pages 77 through  
15   78 and then continuing after that.

16                  Just to get oriented here, I think the  
17   way this is structured -- and correct me if I'm  
18   wrong -- is you have a section here beginning on  
19   Page 75 entitled "Pharmacodynamics."  And then  
20   you're saying here -- you are identifying certain  
21   nervous system effects that could be exerted by  
22   lead during embryonic development, and you list  
23   them out here, right?

24                  A.    No, that's not correct.

1 Q. Okay. Tell me what's wrong with that.

2 A. The nervous system effects are an  
3 example, but the "Pharmacodynamics" section, or  
4 subsection, whatever you want to call it, has  
5 sections within it or subsections within it which  
6 are listed here and continuing on to Page 76.

7 Q. Right. But I mean -- all right. You  
8 explain to me. Why did you list out these  
9 subheadings that you have here, beginning with  
10 "Acute Toxicity" down through, you know, "Toxic  
11 Effects"?

12 A. Well, just a preliminary or an  
13 introduction to the sections that you will see  
14 following. The first one listed there is "Acute  
15 Toxicity," and now the first subsection after that  
16 list is "Acute Toxicity."

17 The second one -- I don't -- whatever it  
18 is, it is, but it's just the order of  
19 presentation.

20 Q. I get it.

21 But what are you saying about whether or  
22 not any of these effects that are listed here  
23 are -- can be caused by lead exposure?

24 A. Each of the sections that -- or

1 subsections that follows that list evaluates that  
2 issue.

3 Q. I see. Okay. So I get it, then.

4 So to the extent that there are  
5 scientific sources or references listed here,  
6 those are the ones, for example, on this acute  
7 toxicity issue, the Klassen, Amdur, and Doull 1986  
8 study, that is the paper that you rely upon for  
9 your statement concerning acute toxicity, right?

10 A. Well, first of all, that's a chapter in  
11 a book. And, secondly, that is one of the  
12 sources, yes. I don't know what other sources are  
13 there.

14 You're going up and down, and I don't --  
15 I don't know what else is there. It looks like a  
16 lot of it does come from Klassen, but I don't  
17 recall.

18 Q. Yeah, I'm just trying to get the  
19 structure down.

20 So for each of these effects that you're  
21 listing here, you included scientific literature  
22 that supports the statements that you have made  
23 with respect to each of these particular effects;  
24 is that right?

1 A. Yeah, absolutely.

2 Q. Okay. Now, I think we covered this  
3 yesterday, but with respect to the issue of  
4 specific causation, and that is to say, when it --  
5 whether any of these effects exist in any of the  
6 individual bellwether plaintiffs, the four that we  
7 have, you defer to physicians with respect to  
8 that. You did not hold any opinions in that  
9 regard; am I right?

10 A. We talked about that at pretty great  
11 length. And I did make the distinction from what  
12 you've just said that I have not addressed that in  
13 the report. And my report is based on the concept  
14 of general causation, and I do defer to physicians  
15 for conclusions about specific causation with  
16 respect to their specific patients.

17 Q. I want to ask you about this Table 3 on  
18 Page 92. I have it highlighted here, Table 3,  
19 "Distribution of Blood Lead Levels Among Children  
20 Less Than 6 Years Old, 2009 through '15, in HHS."

21 I think that means Department of Health  
22 and Human Services from the United States  
23 Government, right?

24 A. Yes.

1 Q. And it describes Region 5 with these  
2 various states: Illinois; Indiana; Michigan;  
3 Minnesota; Ohio; Wisconsin; including Flint,  
4 Michigan. And you have a source here, asterisk.  
5 The source is McClure, Leland; Justin Niles paper  
6 from "The Journal of Pediatrics," right?

7 A. Correct.

8 Q. So why did you include this Table 3 in  
9 your report? What is it that you're trying to get  
10 across here?

11 A. I would have to look at the text. I  
12 don't recall.

13 Q. Why don't you take a look at your report  
14 and the text preceding and/or after it and see if  
15 you can do that for me.

16 A. Sure.

17 (Witness reviews document.)

18 Yes. I believe that you can find that  
19 explanation on Page 91 at the bottom. And it's  
20 interesting that we're looking at that right now  
21 because I did talk to you yesterday about my  
22 reading -- my recollection of an average of about  
23 1 microgram per deciliter as an average blood  
24 level for young children. And here I see that

1 that comes from this period of 2009 to 2015 where  
2 it was actually 1.3 micrograms per deciliter. And  
3 that year is a geometric mean. But in any case,  
4 it's approximately -- you know, assuming some  
5 statistical assumptions, that's where I got that  
6 number from.

7 And the purpose of citing the McClure  
8 study was to narrow down the numbers for the  
9 U.S. -- and you can see this is an average for  
10 young children in the U.S. -- to the region in  
11 which Flint, Michigan -- the Health and Human  
12 Services region in which Flint, Michigan falls.  
13 And that is why I highlighted that information.

14 Q. So I -- while you were speaking, I just  
15 highlighted this section here. Maybe I'll do the  
16 whole thing just so it's clear.

17 So when you were describing yesterday  
18 what you just said about the mean or average being  
19 around 1 micrograms per deciliter, this reports it  
20 as 1.3. But you're remembering now that this is  
21 the source from which you derived that estimate  
22 yesterday; is that right?

23 A. Well, I think it's more confirmatory  
24 because I don't know where I found that number. I

1 don't remember where I found that number. I'm  
2 sure it appears in more than one place. But here  
3 it is, so that's a good thing.

4 Q. All right. So did you compare the  
5 bellwether plaintiffs in terms of where they --  
6 their blood lead levels fall within this range  
7 that is reported in Table 3?

8 A. I don't recall specifically whether I  
9 compared it with Table 3. I do recall comparing  
10 it with the 5 microgram per deciliter number, and  
11 I believe I did that with respect to each -- I  
12 think I did that with respect to each plaintiff.  
13 I'd have to look back into my report to confirm  
14 that. But I don't think I went back to look at  
15 this particular information.

16 Q. Did you do -- aside from this Table 3,  
17 did you look at the actual numbers to determine  
18 where the bellwethers' blood lead levels would  
19 fall to the extent that there were any actual  
20 measurements that were reported as not less than a  
21 certain number but actual numbers? Did you do  
22 that?

23 A. Well, we'd have to look at the report  
24 for each of the plaintiffs to see what I did

1 because I don't remember the specific comparisons  
2 that I made. I do seem to recall making that  
3 comparison with respect to the action level of  
4 5 micrograms per deciliter.

5 Q. Okay. So I don't believe you did, and  
6 you don't remember.

7 Do you have any memory of doing any  
8 additional investigation as to the actual numbers  
9 that the authors found from this survey of the HHS  
10 region for the blood lead levels for children less  
11 than 6 years old during that time period?

12 A. I'm sorry. Can you repeat that  
13 question?

14 Q. Yeah.

15 Did you do anything to investigate the  
16 actual data, the numbers that are reported in this  
17 HHS Region 5 study for blood lead levels of  
18 children less than 6 years old during that period,  
19 2009 to 2015?

20 A. I think the extent of my investigation  
21 is presented here, and I think this table makes it  
22 possible for anyone to look at the actual results  
23 for bellwether plaintiffs in the context of what  
24 is typical for their region. I don't know whether

1 you're -- we're getting into the semantic issue  
2 again. You're asking if I did additional  
3 research. Well, additional on top of this? No,  
4 of course not.

5 Q. Yeah, that's --

6 A. I did my research.

7 Q. I'm trying to make my questions as  
8 direct and simple and clear as I can, Doctor, so  
9 let me try it again.

10 This table that you have that you're  
11 including in your report contains information  
12 about the percentage of children reported from  
13 this study with a blood lead level of less than or  
14 equal to 3, and it reports it as a percentage of  
15 93.0 percent.

16 Is that right so far?

17 A. Yes, of course.

18 Q. So my question is: Did you do any  
19 investigation or research into not what is  
20 reported in Table 3 here, but the actual blood  
21 lead measurements that are reported in this paper  
22 or reported by the HHS to do any additional  
23 evaluation to see where the blood lead levels of  
24 the bellwether plaintiffs fell within that

1 database?

2 A. Well, I think your question is becoming  
3 more clear to me.

4 Q. Good.

5 A. I think that I relied on the data that  
6 was presented and put into my report in the  
7 source, which was McClure. I believe that those  
8 do capture the data that you're talking about.  
9 That's why it's here. And it's also here because  
10 anybody looking at a plaintiff's result can  
11 compare it to that number. And that number is  
12 precisely what you're talking about, what the  
13 numbers were found to be, but they would be an  
14 unwieldy, large table of numbers and this seems to  
15 capture it.

16 Q. I guess my question wasn't clear enough,  
17 because I recognize that you have the table here.  
18 We've established that.

19 What I'm asking you, sir, is: Did you  
20 do any investigation further into the numbers that  
21 resulted in this table, that is to say, that there  
22 would have been a total number of blood lead level  
23 tests that went into this paper from the HHS data,  
24 right?

1 A. Yes.

2 Q. And the blood lead levels that are being  
3 reported are for children between the ages of --  
4 or less than 6 years old during the years 2009  
5 through 2015, right?

6 A. Right.

7 Q. Did you look at that data, look at the  
8 numbers, and investigate where the bellwether  
9 plaintiffs fell within that data as opposed to  
10 what is reported here on Table 3?

11 A. No, I don't think I did anything to  
12 confirm that these numbers are accurate with  
13 respect to the data that they were based on.

14 Q. I'm not asking you that. I'm asking  
15 you --

16 A. I'm completely unclear about what you're  
17 asking me.

18 Q. This has a report that 93 percent of the  
19 kids in this database had a blood lead level of  
20 less than or equal to 3, right?

21 A. Correct.

22 Q. I'm asking you if you did any further  
23 investigation of the numbers to match up or  
24 determine and evaluate for the blood lead levels

1 that are known for these bellwether plaintiffs,  
2 where they fell within the geometric mean or  
3 averages for all of the blood lead levels that  
4 were recorded.

5 MR. LANCIOTTI: Objection; asked and  
6 answered.

7 A. Are you referring to other age groups  
8 beyond the less than 6 years of age?

9 Q. No. Why -- no. Why would I be saying  
10 that? No. I'm talking about this age group.

11 A. Well, to the extent that I understood  
12 your question, which apparently is not to your  
13 satisfaction, I think I've answered that question.  
14 And I've invited you more than once to clarify  
15 your question, and I don't believe that it has  
16 become clear to me.

17 As I said before, this less than  
18 3 percent -- less than 3 microgram per deciliter  
19 is the value that they found when they looked at  
20 those numbers and is the value that I would find  
21 if I looked at those numbers of 93.08 percent of  
22 the kids whose blood levels were recorded in that  
23 age range during that period of time.

24 So it's presented there so that you or

1 any reader could compare the report of a kid's  
2 blood lead level with this table. Did I do it?  
3 Apparently not. I did it with respect to the  
4 5 microgram per deciliter action level. I did not  
5 do it in text with respect to these numbers.

6 Q. Take a look at Page 11 of your report,  
7 please.

8 A. Right.

9 Q. Let's just take R[PPI] v[PPI].

10 On September 2nd, 2015, there's a report  
11 of .7 micrograms per deciliter for her blood lead  
12 level, right?

13 A. Correct.

14 Q. Did you -- this is my question that I'm  
15 trying to get at -- did you undertake an  
16 evaluation to see where that number, the blood  
17 lead level reported for her of .7, would fall  
18 within the database of information that was  
19 provided by these authors from the HHS  
20 distribution for these kids that are reported?

21 A. I assume that it's within the less than  
22 3 microgram per deciliter, characterized as  
23 93.08 percent. Did I actually do a distribution  
24 of the data in that group?

1 Q. Right.

2 A. No, I did not.

3 Q. Okay. Then the distribution of the data  
4 within the group, that's what I'm asking you  
5 about. Did you -- did you analyze the actual  
6 numbers for any reported blood lead levels for the  
7 bellwether plaintiffs to fall where they fell  
8 within that distribution data?

9 A. No, I did not.

10 I believe I understand your question  
11 now, and I did not do that.

12 Q. Okay. That was my question. If I  
13 wasn't clear about it, I'm sorry. That's what I  
14 was trying to get to, and --

15 A. Well, if I was obtuse about it, I'm very  
16 sorry about that as well.

17 MR. LANCIOTTI: David, is this a good  
18 time for a break? We've been going for an hour  
19 and a half. I know we want to try to finish  
20 before lunch, but...

21 MR. ROGERS: Oh, you know, I was looking  
22 at the clock and thinking we started at 9:00.

23 So, yeah, that's fine, Patrick. I don't  
24 think I have a lot more. I think I just have some

1 questions about the end of the report and the  
2 conclusions. So that's fine. Let take a  
3 five-minute break and we'll come back around  
4 10:00.

5 MR. LANCIOTTI: Thank you.

8 (Recess taken.)

11 BY MR. ROGERS:

12 Q. All right. Dr. Michaels, I want to  
13 direct your attention back to your report again to  
14 the "Conclusions" section and focus only on the  
15 four bellwether plaintiffs that we've been  
16 discussing here. And let me just make sure I get  
17 to it.

18                   Okay. So they're in alphabetical order.  
19 They start with -- or you start in your report  
20 with EPPPI S~~PPI~~ , and then it goes forward.

21 I just have a couple of simple remaining  
22 questions for you about your conclusions as you've  
23 expressed here because I think we've covered most  
24 of these yesterday, but I don't think I asked you

1 about this for each one. And, Doctor, I'm not --  
2 I don't -- I'm not going to go through each  
3 plaintiff. I'm just going to ask you about the  
4 first one and whether or not, you know, the  
5 answers are the same for each one of them with  
6 respect to the language because you use the same  
7 language here.

8 So in terms of exposure for  
9 **EPP**I **SPP**I █, you say here in this section that  
10 I'm highlighting now, "Details of his incremental  
11 lead exposure via drinking water are" -- I'm  
12 sorry. You know what? I did the wrong one.  
13 Scratch that. Let me start over again. It's the  
14 first sentence.

15 "Exposure. Transition by the City of  
16 Flint from Lake Huron to the Flint River as the  
17 primary source of municipal water, along with the  
18 decision not to treat the water to protect against  
19 leaching of lead from lead-containing pipes and  
20 plumbing fixtures, together more probably than not  
21 caused incremental exposure of bellwether  
22 plaintiff **EPP**I **SPP**I █ to lead in the drinking  
23 water."

24 Right?

1                   You're mute- -- Dr. Michaels, you're  
2 muted. We can't hear you.

3                   A.    Correct.

4                   Q.    Thanks.

5                   What I want to ask you about is this  
6 incremental exposure.

7                   Am I correct that you haven't, in your  
8 work on the case, attempted to quantify the amount  
9 of additional exposure from the water; is that  
10 right?

11                  A.    No, it's not exactly right. It is  
12 probably more right to say that I wasn't  
13 successful with doing it because there was a lot  
14 of vague information, and I didn't feel that the  
15 information was adequate for coming forth with a  
16 quantified number that would represent that  
17 increment. I certainly would have liked to do  
18 that if I had better data.

19                  Q.    All right. That's a fair answer. I  
20 understand what you're saying.

21                  And then you go on to say "Details of  
22 the incremental exposure via drinking water are  
23 explicated in the 'Findings' section, including,  
24 to the extent possible, the relevant lead sources,

1 the exposure concentrations, and exposure  
2 periods."

3 Right?

4 A. Yes.

5 Q. All right. So this paragraph -- I will  
6 report to you and you can check -- but it's  
7 essentially the same for each of the plaintiffs,  
8 and, therefore, your answer about not being able  
9 to quantify the incremental exposure for each of  
10 the plaintiffs is the same, right? You were not  
11 able to do that?

12 A. That's correct.

13 Let's put it this way. I was not able  
14 to do it to my own satisfaction. I -- you can  
15 always come up with numbers, but the question of  
16 whether they're good numbers is very important,  
17 and I was not happy with the precision with which  
18 I could come up -- or the accuracy with which I  
19 could come up with numbers.

20 Q. You know, I -- when we took the  
21 five-minute break, I looked over the rest of my  
22 planned examination here, and I think we've  
23 covered it.

24 MR. ROGERS: What I'd like to do is --

1 I'm sorry for not doing this earlier, but I didn't  
2 have a chance. Why don't we take -- let's take a  
3 10- or, let's say, a 15-minute break. I'd really  
4 like to talk to my colleague, Mr. Fletcher, and  
5 just make sure that I didn't miss anything,  
6 because we have plenty of time here. And then  
7 we'll -- Mr. Gamble probably has some questions.

9 MR. GAMBLE: Dave, I just -- have just a  
10 few questions relating specifically to my client.

11 MR. ROGERS: Well, would you -- would  
12 your preference be, Travis, to go ahead and do  
13 those now, and then I could maybe finish up?

14 Corey and Patrick, you don't care about  
15 the order, right? If we let Travis go and then I  
16 take a break and talk to Chris, that's fine with  
17 you guys?

18 MR. STERN: Whatever you want.

19 MR. ROGERS: All right.

20 MR. LANCIOTTI: Yeah, that's fine with  
21 me. I think that makes the most sense.

22 MR. ROGERS: Why don't we do that, then.  
23 I'll defer to Travis at this time, but I do want  
24 to take a break, as I said, and talk to

1 Mr. Fletcher and then we'll see if I have any  
2 more. Thank you.

3 Go ahead.

4 I'll stop sharing my screen. Do you  
5 want me to leave it on, Travis, or not?

6 MR. GAMBLE: No. You can take it down,  
7 Dave.

8 MR. ROGERS: Okay.

9 MR. GAMBLE: Are we still on the record  
10 right now?

11 MR. LANCIOTTI: Yes.

12 MR. GAMBLE: Okay. Great.

13 EXAMINATION

14 BY MR. GAMBLE:

15 Q. Mr. Michaels, I just have very brief  
16 questions for you. Mr. Rogers has been very  
17 thorough going through your report and your  
18 opinions, so I'm going to leave it at that.

19 But I represent three defendants in this  
20 lawsuit: Lockwood Andrews & Newnam, Incorporated;  
21 Lockwood Andrews & Newnam, PC; and Leo A. Daly  
22 Company.

23 You understand that?

24 A. Well, you said it pretty quickly, and

1 I'm not familiar with the names.

2 Q. Okay.

3 A. I understand that you represent three  
4 clients.

5 Q. And for the sake of brevity, I'm just  
6 going to refer to them as L-A-N, or LAN. Okay?

7 A. Could you spell those out or say them  
8 slowly so that I can --

9 Q. Yeah. Let me say it slower for you.

10 It's Lockwood Andrews & Newnam, PC, is  
11 one entity.

12 A. Andrews?

13 Q. Andrews & Newnam.

14 A. N-O-O-N-A-N?

15 Q. N-E-U-N-A-M [sic].

16 A. N-E-U --

17 Q. N-A-M.

18 A. -- N-A-M?

19 Q. Correct.

20 A. PC?

21 Q. PC. And then Lockwood Andrews & Newnam,  
22 Incorporated.

23 A. Okay.

24 Q. And then the Leo A. Daly Company.

1 A. Okay.

2 Q. Okay. And I'm going to collectively  
3 refer to those three entities as L-A-N, or LAN.

4 Is that fair?

5 A. Have a good time.

6 Q. Do you have any understanding or any  
7 familiarity with any of those LAN entities?

8 A. No.

9 Q. Okay. And I'm asking you these  
10 questions because yesterday, Mr. Rogers asked you  
11 certain questions about his client, which was  
12 Veolia North America and other Veolia entities.

13 Do you recall those questions yesterday?

14 A. Yes.

15 Q. And I think when he was asking you  
16 questions, he was specifically focusing on whether  
17 you had any opinions whatsoever -- any  
18 professional opinions in this case about his  
19 client and what they did or did not do with regard  
20 to work in the City of Flint.

21 Do you recall that?

22 A. I do.

23 Q. Okay. I just want to ask you the same  
24 questions with regard to my client, LAN.

1                   Do you have any professional opinions as  
2        you sit here today about what LAN did or should  
3        have done with regards to work in the City of  
4        Flint?

5                   A.    As you understood from my answer  
6        yesterday, I don't have specific information that  
7        would include those names of your three clients.  
8        I do have opinions that have been expressed in my  
9        report. And if somehow those opinions were linked  
10      to your client, then there would be a nexus there  
11      that I have not established at this point, but I  
12      wouldn't preclude it -- not that I have any  
13      suspicion of there being such a nexus.

14                  Q.    Fair enough.

15                  You don't have any understanding of what  
16      LAN did or didn't do as far as the scope of work  
17      in the City of Flint from 2013 to 2015, correct?

18                  A.    Correct.

19                  Q.    Okay. And I just want to kind of  
20      establish, we went through your CV a little bit  
21      yesterday, but we didn't specifically discuss what  
22      degrees you have specifically and from what  
23      university or college.

24                  So can you briefly tell me where you did

1 your undergraduate work?

2 A. I was an undergraduate at the City  
3 College of New York, more formally, the City  
4 College of the City University of New York. CCNY  
5 is the main acronym that's used for that.

6 And I went to school there from 1963 to  
7 '67 and received a bachelor of science degree.

8 Q. And what was your BS degree in  
9 specifically? What area?

10 A. Well, I don't think there was a  
11 specialty. I majored in -- oh, yeah, I guess I --  
12 you could say that I majored in biology. Yes,  
13 that's what it was.

14 Q. Okay. So you had a BS -- you graduated  
15 with a biology degree from City College of  
16 New York, correct?

17 A. Yes, that's correct.

18 I'm sorry. It was a long time ago.

19 Q. Fair enough.

20 So after you completed your  
21 undergraduate degree, where did you -- or what  
22 program or what studies -- master's program did  
23 you go into?

24 A. I went to the University of Georgia in

1 Athens, Georgia. And I was studying in their  
2 department of zoology with a specialization in  
3 environmental ecology, you could call it, or  
4 environmental toxicology. I don't know how you  
5 would call it. There's no formal name for it.

6 I was working in the institute of  
7 ecology; that was where my office was. And the  
8 major professor that I had was an associate of  
9 Eugene Odum, who is considered the father of  
10 ecology. He was also on my master's degree  
11 committee.

12 So that gives you an idea of what I  
13 studied within zoology.

14 Q. Okay. And I just want to confirm.  
15 We've talked about your toxicology background and  
16 degree as well yesterday, but I just want to  
17 confirm that you have no education, training, or  
18 experience in engineering, do you?

19 A. I have not been formally trained in  
20 engineering. Of course, the nexus of my work  
21 always is with respect to engineering work, so,  
22 yes, I have experience. And if you want to let  
23 that count as some education, hopefully I've  
24 learned something from it. But if you're talking

1 about academic programs, absolutely not.

2 Q. And you've never worked in the private  
3 sector as an engineer, correct?

4 A. Correct.

5 Q. You're not a licensed professional  
6 engineer, correct?

7 A. Correct.

8 Q. And you haven't ever sealed any design  
9 plans on an engineering project, correct?

10 A. Correct.

11 Q. Okay. I just wanted to establish that  
12 you wouldn't -- you didn't have some sort of  
13 additional training or work experience in those  
14 areas. Fair enough?

15 A. Yeah. I can still remember that I  
16 don't.

17 Q. Okay. Fair enough.

18 MR. GAMBLE: Dr. Michaels, those are  
19 really all of the questions that I have. I  
20 appreciate your time.

21 THE WITNESS: Okay. Well, it was a  
22 pleasure to meet you.

23 MR. GAMBLE: You, too.

24 VIDEOPHOTOGRAPHER: Shall we go off the

1 record?

2 MR. GAMBLE: Sure.

3 VIDEOGRAPHER: The time is 10:15 a.m.,  
4 and we're off the record.

5 (Recess taken.)

6 VIDEOGRAPHER: The time is 10:31 a.m.,  
7 and we're on the record.

8 FURTHER EXAMINATION

9 BY MR. ROGERS:

10 Q. All right, Doctor. I just do have a  
11 couple further questions for you that will  
12 probably take about five minutes. I have my  
13 screen sharing again, I hope, up here.

14 And this is Exhibit 30C, the time entry  
15 chart that you prepared. Can you see that all  
16 right?

17 A. Yes, I can.

18 Q. So I forgot to ask you questions about  
19 this when I put it up before, and it has to do  
20 with the bellwether plaintiffs' selection  
21 criteria, that work that you did that we talked  
22 about. And then there's an entry here that says  
23 "Patrick Lanciotti called re: matrix." You have  
24 an arrow and it says, "Bellwether plaintiffs'

1 selection criteria matrix."

2 So my first question is, what was the  
3 selection criteria?

4 MR. LANCIOTTI: Objection.

5 I think we're getting into attorney work  
6 product here, and I'm going to ask Dr. Michaels  
7 not to answer that.

8 MR. ROGERS: Okay. Well, then, to  
9 shorten things up, Patrick, I was going to ask  
10 questions about the matrix and the selection  
11 criteria.

12 So can we just have an agreement that I  
13 was going to follow up and ask questions about  
14 that, what the selection criteria was, what his  
15 evaluation of the criteria was, that kind of  
16 thing? You're going to instruct him not to answer  
17 on privilege for all of those?

18 MR. LANCIOTTI: That's correct. Yep.

19 MR. ROGERS: Okay. All right. Well,  
20 that was it.

21 That's what I wanted to ask you about.  
22 Given that the -- you're being told not to answer  
23 those questions, I don't have any further  
24 questions at this time, Doctor, except to say --

1 maybe I'll just ask -- and Patrick, you may  
2 instruct him not to, but...

3 BY MR. ROGERS:

4 Q. Did you write any documents that you  
5 were the author of that was plaintiffs' selection  
6 criteria or matrix, Doctor?

7 MR. LANCIOTTI: Yes, same objection.

8 MR. ROGERS: All right. Okay. Well,  
9 that's it, then. Appreciate it.

10 MR. STERN: This is Corey. I have -- I  
11 have a couple of questions.

12 EXAMINATION

13 BY MR. STERN:

14 Q. Doctor, this is Corey Stern.

15 Would you agree with me that the  
16 accuracy of a blood lead level test is only as  
17 good as how close that test was taken in the time  
18 that a child was exposed to lead?

19 A. Yes. If you take the test before the  
20 exposure, you don't capture the exposure. And if  
21 you take the test after the exposure, then there  
22 are changes in the lead levels that will precede,  
23 depending on the amount of time afterwards, and  
24 depending on other factors such as alternative

1 exposures or if the exposure stops. And so,  
2 therefore, there are a lot of variables that you  
3 have to take into account.

4 Q. And so for any question that you may  
5 have answered over the course of the day and a  
6 third of deposition time that you've spent with  
7 the parties in this case, for any answer you gave  
8 related to a particular lead level associated with  
9 one of the four bellwether children, you would  
10 agree that each of those lead levels are only as  
11 accurate as they are close in proximity to  
12 when the child was exposed to lead, correct?

13 MR. ROGERS: Object to --

14 A. Yes --

15 MR. ROGERS: Sorry, Doctor.

16 Object to form. Sorry.

17 BY MR. STERN:

18 Q. What was your answer, sir?

19 A. Yes, I agree with that, and I believe  
20 that I have made clear in the prior discussions  
21 that I felt that the testing for lead was very  
22 sporadic and used crude technology, and that some  
23 of the tests postdated the actual exposure period.

24 So I believe that we did cover this

1 issue, and I certainly agree with you about --  
2 about the summary that you just created for it.

3 Yes.

4 Q. Okay. And just so I'm clear, if,  
5 hypothetically, one of the bellwether children had  
6 a lead level of 1.3, it's possible, and perhaps  
7 even likely, that their peak lead level was much  
8 higher if the test that led to the 1.3 had been  
9 taken weeks or months after they had last been  
10 exposed, correct?

11 MR. ROGERS: Object to form.

12 A. Yes, that is correct. And I believe we  
13 also covered that with respect to the bone numbers  
14 which were indicative of longer-term exposure and  
15 also subject to decline over the ensuing few years  
16 after the bone levels were measured.

17 Q. And when you were asked about means and  
18 medians and averages and comparing the four  
19 bellwether clients to the means, medians, or  
20 averages, again, your answers to those questions  
21 and the information you have with regard to those  
22 lead levels is only as good as those lead levels  
23 are in proximity to the last exposure for the  
24 child, correct?

1 A. Yes, that is correct.

2 MR. STERN: Okay. Those are all of the  
3 questions that I have.

4 MR. ROGERS: Thanks. I have nothing  
5 further.

6 We'll see you all -- I don't know about  
7 Sara and Robert -- but maybe next week.

8 Thanks, Doctor. Good to meet you.

9 THE WITNESS: Thank you very much.

10 MR. LANCIOTTI: Thank you, guys.

11 VIDEOGRAPHER: The time is 10:37 a.m.

12 This deposition has concluded, and we're  
13 off the record.

14 (Signature not waived.)

15 - - -

16 Thereupon, the deposition was concluded  
17 at 10:37 a.m.

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3                   I, ROBERT MICHAELS, PH.D., do hereby  
4 certify that I have read the foregoing transcript  
5 of my deposition given on November 13, 2020; that  
6 together with the correction page attached hereto  
7 noting changes to form or substance, if any, it is  
8 true and correct.

9

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10

ROBERT MICHAELS, PH.D.

11

12               I do hereby certify that the foregoing  
13 transcript of the deposition of ROBERT MICHAELS,  
14 PH.D. was submitted to the witness for reading and  
15 signing; that after he had stated to the  
16 undersigned Notary Public that he had read and  
17 examined his deposition, he signed the same in my  
18 presence on this \_\_\_\_ day of \_\_\_\_\_, 2020.

19

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20

NOTARY PUBLIC

21

My commission expires: \_\_\_\_\_

22

- - -

23

24

1

CERTIFICATE

2

3

4 I, Sara S. Clark, Registered Merit  
5 Reporter, Certified Realtime Reporter, Certified  
6 Realtime Captioner, a Notary Public, duly  
7 commissioned and qualified, do hereby certify  
8 that the within-named ROBERT MICHAELS, PH.D.  
9 was duly remotely sworn to testify to the  
10 truth, the whole truth, and nothing but the  
11 truth.

12

13 I DO FURTHER CERTIFY that the  
14 foregoing is a verbatim transcript of the  
15 testimony as taken stenographically by me at the  
16 time, place, and on the date hereinbefore set  
17 forth, to the best of my ability.

18

19 I DO FURTHER CERTIFY that I am neither  
20 a relative nor employee nor attorney nor counsel  
21 of any of the parties to this action, and that I  
22 am neither a relative nor employee of such  
23 attorney or counsel, and that I am not  
financially interested in the action.

24 IN WITNESS WHEREOF, I have hereunto  
set my hand and affixed my seal on this 3rd day  
of December, 2020.

25

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31 Sara S. Clark, RPR/RMR/CRR/CRC  
32 Notary Public  
33 Registered Merit Reporter  
34 Certified Realtime Reporter  
35 Certified Realtime Captioner

36

37 My commission expires: March 10, 2023